

Claims

What is claimed is:

- 5 1. An arrangement for the display of images of a scene or object
- comprising a transfective image display device (1) consisting of a great number of picture elements (pixels) which are arranged in a matrix array of rows and/or columns, and on which image information from several perspective views of the scene or object can be displayed,
- 10 - and comprising a plane wavelength filter array (2) that is arranged behind the image display device (1) (in a viewer's viewing direction) and that consists of a great number of filter elements arranged in rows and/or columns, part of which are opaque, and the remaining part are transparent to light of specified wavelength ranges,
- and comprising an illuminator (3), preferably a planar one, arranged behind the wavelength filter array (2) (in a viewer's viewing direction), in which
- 15 - in a first mode of operation, light of the illuminator (3) reaches the viewer passing through at least a share of the light-transparent filter elements and subsequently through a share, assigned to them, of the pixels of the image display device (1), so that the scene or object is visible to the viewer in three dimensions, and in which
- 20 - in a second mode of operation, light incident on the front side of the image display device (1) is used, thanks to the transfective properties of the latter, to illuminate it as homogeneously as possible, so that at least part of the scene or object is visible to the viewer in two dimensions.
- 25 2. An arrangement as claimed in Claim 1, characterized in that, for enhancing the light incident on the front side of the image display device (1), a second illuminator is provided, which emits light on the front side of the image display device (1).
- 30 3. An arrangement as claimed in Claim 2, characterized in that the second illuminator is a planar illuminator designed as a plate-shaped light guide (5), and that the said light guide (5) receives light from one or several, laterally arranged light sources (4).
- 35 4. An arrangement as claimed in any of the previous claims, characterized in that either parts of the second illuminator belong to a touch screen, or a touch screen is arranged (in a viewer's viewing direction) in front of the second illuminator or in front of the image display device (1).

5. An arrangement as claimed in any of the previous claims, characterized in that, in the second mode of operation, the illuminating device (3) arranged behind the wavelength filter array (2) is switched off or dimmed down.
- 5 6. An arrangement as claimed in any of the previous claims, comprising, in addition, a computing device for controlling the image display device (1) and the respective illuminators (3, 4, 5) provided.
7. An arrangement for the display of images of a scene or object,
- 10 - comprising an image display device (1) consisting of a great number pixels that are arranged in a matrix array of rows and/or columns, and on which image information from several perspective views of the scene or object can be displayed,
- and comprising a wavelength filter array (6) consisting of a great number of filter elements arranged in rows and/or columns, part of which are transparent to light of specified wavelength ranges, and the remaining part are opaque,
- 15 - and comprising an illuminating device (3), preferably a planar illuminator, arranged behind the image display device (1) (in a viewer's viewing direction),
- in which the wavelength filter array (6) in a first position is arranged in front of the image display device (1) (in a viewer's viewing direction), so that light reaches the viewer passing through at least part of the pixels of the image display device (1) and subsequently through a share, assigned to them, of the light-transparent filter elements, which makes the scene or object visible to the viewer in three dimensions, and in which
- 20 - and in which the wavelength filter array (6) in a second position is not arranged in front of the image display device (1) (in a viewer's viewing direction), so that the light reaches the viewer passing through at least part of the pixels of the image display device (1), but subsequently not through light-transparent filter elements of the wavelength filter array 6, so that the scene or object is visible to the viewer in two dimensions.
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8. An arrangement as claimed in Claim 7, characterized in that the wavelength filter array (6) in a second position is arranged (in a viewer's viewing direction) partly in front of and partly not in front of the image display device (1), so that only part of the light reaches the viewer through at least part of the pixels of the image display device (1) but not through light-transparent filter elements, so that only part of the scene or object is visible to the viewer in two dimensions.
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9. An arrangement as claimed in any of Claims 7 or 8, characterized in that the two positions of the wavelength filter array (6) are reached by a movement of the latter.
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10. An arrangement as claimed in any of Claims 7 through 9, characterized in that the wavelength filter array (6) and also, where provided, its substrate material are flexible, so that the wavelength filter array (6) can be bent.
- 5 11. An arrangement as claimed in any of Claims 9 or 10, characterized in that the wavelength filter array (6), when moved, is guided at least partially around the image display device (1).
- 10 12. An arrangement as claimed in any of Claims 7 through 11, characterized in that the wavelength filter array (6) is shifted between the said first and second positions on one or several rails (7).
- 15 13. An arrangement as claimed in Claim 12, characterized in that the wavelength filter array (6) is mechanically coupled with a knob that can be gripped and shifted by the user.
14. An arrangement for the display of images of a scene or object,
- comprising an image display device (1) consisting of a great number of pixels that are arranged in a matrix array of rows and/or columns, and on which image information from several perspective views of the scene or object can be displayed,

20 - and comprising a wavelength filter array (9a, 9b) that is arranged in front of or behind the image display device (1) (in a viewer's viewing direction), and that consists of a great number of filter elements arranged in rows and/or columns, part of which are transparent to light of specified wavelength ranges, while the remaining part are opaque, with at least every tenth filter element having photochromic, color-changing properties,

25 - in which, in a first mode of operation, especially due to a first state of the photochromic, color-changing filter elements, the wavelength filter array (9a) acts in such a way that light either passes first through filter elements and subsequently through the image display device (1), or first through, or out of, the image display device (1) and subsequently through filter elements, so that the scene or object is visible to the viewer in three dimensions, and

30 - in which, in a second mode of operation, especially due to a second state of the photochromic, color-changing filter elements, the wavelength filter array (9b) acts in such a way that light either passes first through filter elements and subsequently through the image display device (1), or first through, or out of, the image display device (1) and subsequently through filter elements, so that the scene or object is visible to the viewer at least

35 partially in two dimensions.

15. An arrangement as claimed in Claim 14, further comprising at least one UV lamp, which, when switched on, produces the second state of photochromic, color-changing filter elements and, when switched off, produces the first state of photochromic, color-changing filter elements.
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16. An arrangement as claimed in Claim 15, characterized in that at least one UV lamp (8) is arranged behind the wavelength filter array (9a, 9b) (in the viewing direction).
17. An arrangement as claimed in Claim 15, characterized in that at least one UV lamp (8) is integrated in a planar illuminating device that is arranged behind the image display device (1).
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18. An arrangement as claimed in Claim 15, characterized in that at least one UV lamp (8) is arranged in front of or beside the wavelength filter array (9a, 9b), if this is arranged in front of the image display device (1) (in viewing direction).
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19. An arrangement as claimed in any of Claims 14 through 18, characterized in that the filter action in the first or second state of the photochromic, color-changing filter elements is one out of the following group: essentially opaque to the visible spectrum, essentially transparent to the visible spectrum, transparent to red, green, blue, yellow, magenta or cyan light.
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20. An arrangement as claimed in any of Claims 14 through 18, characterized in that the image display device (1) comprises a projection apparatus.
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21. An arrangement as claimed in Claim 20, characterized in that at least two wavelength filter arrays (9a, 9b) are provided, with at least every tenth filter element on each wavelength filter array (9a, 9b) has photochromic, color-changing properties, and with at least one wavelength filter array (9a, 9b) being arranged on the projection side of a projection screen.
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22. An arrangement for the display of images of a scene or object,
- comprising an image display device (10) consisting of a great number of pixels that are arranged in a matrix array of rows and/or columns, and on which image information from several perspective views of the scene or object can be displayed,
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- and comprising a wavelength filter array (11) that is, in a first mode of operation, arranged in front of or behind the image display device (10) (in a viewer's viewing direction), and

that consists of a great number of filter elements arranged in rows and/or columns, part of which are transparent to light of specified wavelength ranges, whereas the remaining part are opaque to light,

- in which the wavelength filter array (11) in the first mode of operation acts in such a way that light passes through filter elements and subsequently through the image display device (10), or through/out of the image display device (10) and subsequently through filter elements, so that the scene or object is visible to the viewer in three dimensions, and
 - in which the wavelength filter array (11), in a second mode of operation, is replaced by a substrate (12) that is largely transparent to visible light, so that the scene or object is visible to the viewer at least partially in two dimensions.
23. An arrangement as claimed in Claim 22, characterized in that the image display device (10) is a plasma screen, and the substrate (12) is an electrically conductive, transparent pane of glass, PMMA or some laminate.
24. An arrangement as claimed in any of Claims 22 and 23, characterized in that switching between the first and second modes of operation is effected by mechanical displacement of the wavelength filter array (11) or the substrate (12), and that preferably, in one of the two modes of operation, either the wavelength filter array (11) or the substrate (12) are intermediately held in a cassette.